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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,825

02/28/2008

Keith S. Kyler

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BAE SYSTEMS

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EXAMINER

PARSA, JAFAR F

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

11/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/553,825	Applicant(s) KYLER ET AL.	
	Examiner Jafar Parsa	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/21/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim 18 is objected to because of the following informalities:

The phrase "*treating dinitrotoluene with nitric acid having and trifluorosulfonic acid*" should be corrected to treating or reacting dinitrotoluene with nitric acid in the presence of trifluoromethanesulfonic acid

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cazenove et al (USPN 4,022,844) in view of Coon et al (Journal of Organic Chemistry (1973), 38 (25), 4243-4248).

Applicants' claimed invention is directed to a process for preparing trinitrotoluene (TNT) comprising the steps of:

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- (a) treating toluene with nitric acid to produce dinitrotolucne (DNT); and
- (b) then treating the DNT formed in step (b) with nitric acid and trifluoromethanesulfonic acid to produce the TNT.

Cazenove teaches a process for the continuous production of trinitrotoluene by dinitrating and trinitrating mononitrotoluene in the presence of concentrated nitric acid and concentrated sulphuric acid or fuming sulphuric acid, in which the trinitration step is carried out in a group of pieces of equipment in which the reagents flow in co-current, this group comprising at least two stages, each stage having at least two nitration reactors in series followed by a separator and the first of the reactors of each stage being supplied separately with a mixture of concentrated sulphuric acid or fuming sulphuric acid and nitric acid. See col. 2, lines 33-45.

Cazenove teaches that the nitric acid used to supply the trinitration reactors preferably has a concentration of at least 98% by weight and the concentrated sulphuric acid used preferably has a concentration of at least 96% by weight. When concentrated sulphuric acid is used, the trinitration step preferably comprises at least 3 stages. See col. 3, lines 23-28. The nitration conducted at a temperature from 40 to 100 °C. See the Table in col. 5.

The difference between Cazenove and the claimed invention is that the instant claims require a trifluoromethanesulfonic (TFMSA) acid instead of concentrated sulfuric acid. However, Coon teaches that trifluoromethanesulfonic acid or sulfuric acid can be used interchangeably in the nitration of aromatic compounds.

Coon teaches that the nitration of aromatic compounds is accomplished by nitrating reagent not previously reported. Two equivalences of trifluoromethanesulfonic (I) and 1 one nitric acid combine to form a white crystalline solid that has been identified as a mixture of $\text{NO}_2 + \text{CF}_3\text{SO}_3^-$ (II) and monohydrate of I. II is an excellent nitrating reagent in inert organic solvents, **H_2SO_4 or $\text{CF}_3\text{SO}_3\text{H}$** , and has been used to nitrate PhMe, C_6H_6 , PhNO_2 , PhCl, m- $\text{C}_6\text{H}_4\text{Me}_2$, and PhCF_3 . *Nitration with II have been carried out over a temperature range of -110 to +30 °C, yield are consistently >98% and exceptionally high positional selectivity has been demonstrated. See abstract.* It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to use trifluoromethanesulfonic acid in the nitration of aromatic compounds, in order to obtain a yield consistently >98% with exceptionally high positional selectivity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jafar Parsa whose telephone number is (571)272-0643. The examiner can normally be reached on 9 a.m.-5:30 p.m. (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jafar Parsa/
Primary Examiner, Art Unit 1621